

# Middle Tennessee Workforce Board

2016 Labor Education Alignment Program (LEAP 2.0)

## *Advanced Manufacturing: Troika LEAP Collaborative*

### **Middle Tennessee Workforce Board**


In partnership with

TCAT – Murfreesboro  
Cannon County Schools  
Bedford County Schools  
Wilson County Schools  
Rutherford County Schools  
Wegmann automotive  
Orchid International  
Ideal Tridon  
FANUC North America  
Manufacturing Skills Standards Council  
Multi-State Advanced Manufacturing Consortium



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Funding Requested: \$998,883.15

  
Director of Higher Education Institution

  
Project Director

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## *ABSTRACT*

We have observed three primary opportunities to further assist in the development of a skilled, regional workforce. These three opportunities will be the substance of the grant. The 3 opportunities include:

1. Create a FAST center (Fanuc Authorize Satellite Training) to train instructors and industry on automation.
2. Implement MSSC's (Manufacturing Skills Standards Council's) CPT (Certified Production Technician) certificates at the high school level in Rutherford and surrounding counties to increase awareness of and interest in advanced manufacturing careers.
3. Implement a DOL-registered Precision Machining and Tool and Die Apprenticeship.

Partners in relation to the FAST training Center include MTSU, FANUC, and Nissan. We will request 4 robots to populate the FAST Training Center, two additional robots for MTSU, and 7 instructors to receive FANUC CERT training in Detroit, Michigan or where available. The FAST Center will be housed within TCAT-Murfreesboro Smyrna Campus. Currently, only 7 FAST centers exist in the country. This collaboration could result in the 8<sup>th</sup> FAST Center being located in Tennessee.

Partners relating to MSSC include TCAT-Murfreesboro; Rutherford County, Bedford County, Wilson County, and Cannon County Schools; and the Manufacturing Skills Standards Council. MSSC's CPT credential represents the culmination of four sub-certifications: Quality, Safety, Workplace Effectiveness, and Manufacturing Processes and Production. We hope to rely on MSSC certifications to create the foundation for a dual enrollment/dual credit expansion offered to Wilson, Rutherford, Cannon, Coffee, and any additional regional secondary systems that express interest. Amatrol offers a perpetual license that includes 20 seats of curriculum that teach to the 4 MSSC exams. This package is only available for use at high schools. We would like to use this grant to purchase the perpetual license for 4 high schools. We will also request grant funds to train and certify up to 30 secondary and post-secondary advanced manufacturing program instructors as MSSC Full CPT-Certified Instructors. Finally, some grant funds will be allocated for acquisition of equipment needed to teach advanced manufacturing classes and MSSC at the high school level.

Partners included in the DOL-registered Precision Machining and Tool and Die Apprenticeship will initially include Orchid International, Wegmann Automotive, and Ideal Tridon. Once a template has been created for TCAT-Murfreesboro to aid in the implementation of industry-initiated, DOL-registered apprenticeships – including identification of 576 requisite hours of classroom instruction over a four year period – TCAT-Murfreesboro will aid additional employers seeking to incorporate the apprenticeship model of Work-Based Learning. Tools and supplies to teach the classroom portion of this apprenticeship will be purchased with grant funds.

A steering committee will be comprised of representation from the Middle Tennessee Workforce Investment Board, MSSC, M-S AMC, FANUC, MTSU, participating secondary school districts, TCAT-Murfreesboro, and all industry partners participating in the apprenticeship.

## **Section 1. Demonstrated Need**

### *1A – Localized Data Demonstrating the Need for Action*

According to James Brown, Executive Director of the STEM Education Coalition in Washington D.C., “The future of the economy is STEM. That’s where the jobs of tomorrow will be” (U.S. BLS, 2014). This fact is increasingly clear in Tennessee, where 11.5% of the workforce is employed in manufacturing. In fact, manufacturing produces 16.1% of Tennessee’s GSP, and in 2014, Tennessee’s manufacturing exports exceeded \$31.7 billion (NAM, 2016).

The *2015 Annual LEAP Report: An Occupational Analysis* asserts that STEM and STEM-related occupations “are projected to have many openings and are high-wage jobs.” The LEAP report also identifies specific occupations that are characterized by both a long- *and* short-term skills gap as well as a high share of workers age 55 and older. First on this list of occupations is “Tool and Die Makers.” The attached employer letters reiterate this need regionally. The LEAP report also reveals that a high concentration of the occupations in short- and long-term demand can be found in the manufacturing industry. In fact, advanced manufacturing job creation in Tennessee grew 27.1% from 2010 to 2015 compared to a national average increase of 8.7% (TNECD, 2016). It goes without saying that this rate of growth in job creation must be met with an increased supply of skilled laborers.

The Tennessee Department of Labor and Workforce Development grades both “Electrical/Electronic Equipment Repairers” and “Precision Production Pathways” with an “A-Excellent” in relation to job opportunities in those clusters, both of which will be supplied by the initiatives of the Advanced Manufacturing: Troika LEAP Collaborative.

Data from Jobs4tn.gov helps to illustrate the need for the initiatives of this grant on a *localized* level. Within 50 miles of Murfreesboro, the keyword “production” produces over 190

results and over 579 positions; the keyword “machine” produces 114 results with 328 positions; there are 95 jobs and over 413 positions *in* production, and 50 jobs in installation, maintenance, and repair. The supply to demand ratio for the “installation, maintenance, and repair” pathway sat at .38 just a few years ago, further reinforcing the need for the following grant initiatives (University of Tennessee, 2011).

*1B – Linkages between grant activities and local need*

This collaboration chose three stackable workforce development support service strategies that we believe will insure the alignment of educational content with industry needs through collaboration, as well as an increase the regional supply of skilled laborers:

**Short-term, accelerated training strategy.** We will incorporate the Manufacturing Skills Standards Council’s Certified Production Technician to address the need to provide formal, proven, nationally-recognized educational opportunities in STEM for secondary students. This will increase secondary school participant awareness of manufacturing opportunities and fundamentals, serving not just to educate in STEM, but to delineate to employers those high school graduates with an affinity for manufacturing processes.

**Longer-term/WBL Training Strategy.** We will create and implement apprenticeships and other WBL platforms for multiple industry partners in the areas of Precision Machining and Tool and Die. Local employers including Wegmann automotive, Orchid International, and Ideal Tridon have - for over three years – consistently requested supplemental training in Precision Machining and Tool and Die to help existing employees and prospective new hires attain the advanced skills needed in the field. Employers may individually choose whether or not their apprenticeships are formally DOL-registered. The 4-year, DOL *model* may be utilized, requiring several thousand hours of OJT supplemented by over 500 classroom hours to be delivered by

TCAT-Murfreesboro. Alternatively, industry partners might work with the project director and M-S AMC to create *customized*, “special industry” training programs that result in the award of a TCAT certificate.

**Upskilling incumbent workers and instructors.** We will collaborate with FANUC, the largest provider of automation equipment in the world, to create a Fanuc Authorized Satellite Training Center in Smyrna, Tennessee (pending final permissions from Fanuc once all requirements have been met.) This location will be used to train students studying Industrial Maintenance and Mechatronics at TCAT-Murfreesboro and MTSU as well as incumbent workers and instructors seeking advanced certification in robotics and automation. There are less than nine such locations on the continental United States. The FAST training center, if approved, would serve participants from across the United States. Even without FAST status, students will be trained in “Robotics Handling Tool Operations” and “IR2Vision,” culminating in both FANUC and TCAT-Murfreesboro, Smyrna Campus certificates. The FANUC certifications will meet ANSI/ISO Standards and are certified through NOCTI.

#### *1C – Drive to 55 Linkage*

Workforce Development Support Strategy #1, MSSC’s Certified Production Technician Training, directly supports Drive to 55’s goal of equipping 55% of Tennessee’s population with a postsecondary degree or certificate by culminating in a nationally-recognized certificate. The strategy indirectly supports Drive to 55 through the creation of a pathway to TCAT via dual enrollment. The strategy will increase certificate awardees as well as diploma awardees at the level of vocational institution.

Workforce Development Support Strategy #2, the WBL apprenticeship, will support Drive to 55 by awarding completers a certificate of completion as well as a TCAT diploma. For

those industry partners who choose to implement a DOL-registered apprenticeship, a DOL certificate will be awarded as well, which demonstrates occupational proficiency and serves as a stackable credential to a TCAT diploma or MTSU degree.

Workforce Development Support Strategy #3 will support Drive to 55 by leading to the creation of more instructors certified to pass the ANSI/ISO certified FANUC courses. Certified instructors may pass these credentials to students who meet the credentialing requirements established by FANUC and approved by ANSI/ISO.

## **Section 2. Program Plan**

### *2A – Detailed Project Timeline and Overview (For Detailed Timeline, see Appendix A)*

One of three main initiatives of this grant, the short-term, accelerated workforce service strategy, entails establishing MSSC's CPT pathway at one high school in Cannon County, one high school in Bedford County, and one high school in Wilson County. These high schools will pilot MSSC's Certified Production Technician Program. LEAP funds will be required to purchase 25 perpetual student licenses per partner high school (totaling \$120,000). Amatrol designed the curriculum for MSSC and reserved the right to market the seats in this way - at this price - only to high schools. *[Update...in the late hours of drafting this proposal, MSSC offered \$20,000 in kind per 25-seat package. The revised total for this line item is \$80,000 after MSSC's \$80,000 contribution!]*

Additionally, LEAP funds will be allotted to train up to 21 instructors in Wilson, Rutherford, Bedford, and Cannon County Schools, making them Certified MSSC CPT Instructors. The cost of this training is \$1870 per instructor for a total of \$39,270.00

The curriculum towards CPT certification includes labs. The equipment for those labs to be implemented at each of three high schools (two in Wilson, one in Cannon, and one in

Bedford) is listed on Appendix B, and totals \$277,360, including installation, shipping, and handling. The labs will insure the development of competencies in some areas of advanced manufacturing, including pneumatics, hydraulics, machine tools, AC/DC electrical, electrical controls, measuring tools, mechanical drives, and mechanical fabrication. With no exception, the equipment requested for implementation at the high schools is integral to mastery of MSSC's CPT, and aligns with the curriculum taught in the Mechatronics program at TCAT-Murfreesboro. This equipment further legitimizes the award of dual enrollment status.

The second workforce development service strategy that will be funded by the AM: Troika LEAP Collaborative involves industry partners Wegmann automotive, Ideal Tridon, and Orchid International. TCAT-Murfreesboro would like to assist these companies in the creation of customized training programs in the apprenticeship model. These industry partners will work with the LEAP project director and M-S AMC to develop and implement curriculum, organize class scheduling, and identify or create content that aligns with industry needs. This content will be identified by utilizing tools developed by the Multi-State Advanced Manufacturing Consortium (M-S AMC), of which TCAT-Murfreesboro is a member. Some of the specific tools to be used include GAP analysis surveys and performance-based objectives that hinge on appropriate competency mastery. While much of the learning will take place on-the-job, at least 500 hours (over a 4-year period) will be taught by educational partners in this proposal. \$30,000 of this LEAP award has been allocated to equipment acquisitions for the apprenticeship/WBL program. The competencies needed and ultimately the content of the curriculum as it relates to Tool and Die will be identified as part of this funding. TCAT-Murfreesboro possesses the framework for a precision machining apprenticeship and will allow use of its equipment for training apprentices as academic scheduling permits.



The third workforce development support service strategy involves partners TCAT-Murfreesboro, MTSU, and FANUC. The strategy funds the creation of a robotics training lab that will meet FANUC Authorized Satellite Training (FAST) requirements for eligibility. The specific requirements to become FAST-eligible can be found in Appendix C. The Sr. District Manager of FANUC in Middle Tennessee provided this writer with a list of thirty Middle Tennessee employers (to be used for reference only in order to insure the confidentiality of his clients) that illustrated the existence of over 6000 Fanuc robots in Middle Tennessee! Much like Precision Machinists and Tool and Die Technicians, “automation” or “robotics” technicians represent a high wage, high demand occupational niche in the United States that is quite popular with advanced manufacturing in Middle Tennessee. Few regional educational institutions are supplying a skilled workforce with specialized advanced manufacturing training in automation and robotics, yet the technology is almost universally present in advanced manufacturing facilities in our region. LEAP funding for this proposal will alleviate pressure on regional employers to fill these positions by creating a more highly skilled, incumbent, local workforce. Equipment needed for this workforce development service support strategy is located in the budget, and includes funds for the equipment necessary for FAST eligibility, as well as funding for training and equipment to be located at MTSU that is required to facilitate not only pathways to success for students, but to fund the creation of a local pool of instructors who are qualified to instruct part-time at the FAST training center. Funding for salary and benefits for a full-time FAST instructor is requested for six months of the 30 month implementation period, to be hired at least two months before CERT and IRVISION training classes begin, after which time the position will be funded by revenue from tuition for the training program. Graduates will receive an ANSI/ISO accredited FANUC certification as well as a TCAT-Murfreesboro certificate.

## *2B – Measurable Objectives*

Most measurable objectives are included within the *AM: Troika Project Timeline* (Appendix A). Not specifically listed there are the following measurable objectives, which apply to each workforce development service support strategy and were summarized broadly as “reporting:” increased number of high school participants dually enrolled in MSSC with TCAT-Murfreesboro, increased high school completers dually enrolled in MSSC with TCAT-Murfreesboro, increased incumbent worker specialized training participants, increased incumbent worker completers, increase in number of industry partners served, increased number of participant and completers by company, GAP analysis results as they pertain to what industry needs versus what education provides in the realm of Precision Machining and Tool and Die, increased number of FANUC, MSSC, and special industry completion certificates awarded in support of Drive to 55, number of unemployed who receive/complete training, and acquisition of employment and/or increased pay for program completers. The project director will spearhead the compilation of this data in cooperation with representatives identified by steering committee members and the Middle Tennessee Workforce Board

## *2C – Project Governance*

A steering committee will be comprised of one representative from Workforce Investment Area 9, Wegmann Automotive, Ideal Tridon, Rutherford County Schools, Wilson County Schools, Cannon County Schools, Bedford County Schools, TCAT-Murfreesboro, MTSU, Fanuc North America, MSSC, and the M-S AMC. Other industry partners who choose to collaborate in specialized training in Tool and Die/Precision Machining will be allowed representation on the steering committee after formal notice of intent to sponsor students is received by the project director. Formal and informal consultation will be provided by MSSC,

FANUC, Technical Training Aids, and the Multi-State Advanced Manufacturing Consortium.

The project director will implement and report to the steering committee on implementation of all three workforce development service support strategies. He/she will liaise with each partner on an individual level to insure that all grant initiatives are implemented in a timely manner as outlined in the project timeline. Any deviations from the timeline must be justified and relayed to the steering committee for resolution. The project director will be accountable to the steering committee to provide agendas for steering committee meetings, collaborate with TCAT-Murfreesboro on fiscal administration of the grant, execute equipment acquisitions for the respective programs, assist in delivery readiness of equipment, collaborate with suppliers and vendors as needed, administer the hiring of the FAST instructor, orchestrate and host MSSC's instructor training, communicate to all partners a monthly "top ten" list to illustrate and account for the steps of successful implementation, orchestrate the application for and compliance with FAST standards, hire one administrative support staff member, identify requisite players for reporting and data tracking, meet the reporting requirements for this LEAP proposal in a manner that complies with both FERPA and related state, local, and private policies for PII, and address questions and concerns communicated by the steering committee. Steering Committee involvement will be paramount to the successful implementation of the *AM: Troika LEAP Collaborative*, as well as the intended expansion of these initiatives throughout and after the 30 month implementation period.

#### *2D – Justification for equipment*

Every piece of equipment is requisite for implementation of the three workforce development service support strategies. The budget plan will elaborate in detail, but all Fanuc equipment is required for FAST eligibility, to create an instructor resource pool, and to create the

much-needed skilled workforce in robotics and automation in our region. All Amatrol equipment is needed to teach MSSC certification credential with labs at the secondary schools. The Tool and Die equipment is the minimum required equipment to launch the apprenticeship considering TCAT-Murfreesboro will allow the use of their Machine Tool space and equipment.

#### *2E – Localized need and academic credentialing*

Localized need was addressed in section 1A, and is reiterated by TCAT-Murfreesboro's program advisory board members who have consistently identified the need for Tool and Die and more precision machinists over the last three years.

All strategies result in the award of credentials. MSSC leads to MSSC's CPT credential and a certificate of completion from TCAT-Murfreesboro, as well as the potential for dual enrollment status and progression up a pathway to a TCAT diploma. The Fanuc training results in a TCAT-certificate and FANUC certificates, Level 1 and 2, that are accredited by ANSI/ISO. The apprenticeship program/special industry programs in Tool and Die and Precision Machining will culminate in the award of a DOL registered Apprenticeship Certificate for industry partners who chooses to implement a DOL apprenticeship, and a certificate of completion from TCAT-Murfreesboro for special industry training that is not DOL-registered. Additionally, credit will be awarded in TCAT-Murfreesboro's Precision Machining program for those who wish to pursue a diploma. All three workforce development support service strategies are aligned with the DOL Advanced Manufacturing Competency Model.

#### *2-F Clear plan for employer engagement, student outcomes, and payment reporting*

The primary function of the project director will be implementation of this proposal. The project director's area of responsibility includes liaising with industry partners both in and outside of the steering committee meetings. The project manager will build on established

relationships with both industry and TCAT instructors to insure that additional regional employers are aware of and have access to the specialized industry training relating to Tool and Die, Fanuc Robotics, and Precision Machining. The instructors will report to the project manager on student progress towards desired outcomes at the secondary school level: completion and certificate attainment. The Project director will work with the administrative assistant to gather participant data regarding placement. The TCAT Student Information Management System will be used to track participant data. The project director will collaborate with TCAT's Workforce Development Coordinator and student services as necessary to achieve these objectives. The project director will work with the Financial Coordinator of TCAT-Murfreesboro and finance at the sister institution, Motlow Community College, to maintain accurate accounting, budgeting, and timely disbursements throughout the implementation period. Finances will also be reported at select Steering Committee meetings when requested by the Steering Committee one month in advance.

### **Section 3. Strength of Partnership**

#### *3A & B – Role of each partner and capabilities*

The roles of the project director and steering committee members have been established throughout this grant. Additionally, each high school partner will be responsible for identifying the STEM instructors who will attend MSSC and submit this individual's information to the project director. The project director will support all of the MSSC instructors in implementation, coordinating MSSC training for the instructors, and providing support when necessary. The secondary schools will provide contact information to the project director for receiving the equipment, and will assist in logistics and readiness relating to equipment delivery and location.

The high school will provide only data allowable by law with release forms for participants. The high schools will relay requisite information about MSSC to participants.

Industry partners, initially Wegmann Automotive, Ideal Tridon, and Orchid International, will submit the results of GAP analysis solicited by the project director supported by M-S AMC and Middle Tennessee Workforce Investment Board. This GAP analysis will be used during collaborative meetings with training-designated industry managers at each company to insure the proper curriculum, competencies, and labs are being taught. For those industry partners who opt for a DOL-registered apprenticeship, federal compliance with DOL-registered apprenticeship programs will be mandated. The project director will assist with the program creation, as well as the approval process, coordinating with Nathaniel Brown at the DOL office in Nashville. Finally, industry partners will be expected to align “on the job experiences” with what is taught in the classroom to the degree possible considering production demands.

TCAT-Murfreesboro will house the project director and support the project director regarding finances and budgeting, student data, student enrollment, implementation of dual enrollment, implementation of credit recognition and formal articulation agreements, awarding of certificates, hosting of training, and hiring of instructors. TCAT-Murfreesboro’s director will sit on the steering committee and provide input to the AM: Troika LEAP Collaborative implementation.

MTSU will align their Mechatronics program with industry needs by implementing robotics into their mechatronics program, contributing to a pool of FANUC authorized, trained instructors, and maximizing articulation agreements and credit recognition for those attending any of these LEAP programs. Additionally, the FANUC robots to be housed at MTSU will be

used to provide professional development opportunities to other regional instructors when needed.

*3B and C Additional Partner Capabilities and Letters have been included in Appendix D.*

**Section 4. Budget Plan** – *See attached Budget and Budget Lines in Appendix E and F*

### **Section 5. Sustainability**

Sustainability was paramount when developing this proposal. The fact that the majority of expenses in this proposal are one-time, sunk costs reflects the attention to sustainability.

MSSC CPT Certification packages, including all requisite equipment, have been included for four high schools. Licensing purchased is perpetual, and the high schools will possess 25 seats indefinitely. The instructor certification does not expire once awarded, and enough seats of instructor training (21) have been purchased to train alternate instructors. Equipment represents the second largest cost of delivering MSSC's CPT training, and requisite equipment costs have been included in this proposal. Remaining costs after the implementation period will be supplies to complete some labs (minimal), and student exam costs (\$75/exam). A prospective expansion plan includes the provision of MSSC's CPT training provided by TCAT-Murfreesboro to the unemployed in collaboration with the Middle Tennessee Workforce Board.

Regarding the WBL initiative, the price per apprentice will be negotiated with each participating industry partner, and special contracts will be agreed upon (through the project director, industry partner, and TCAT-Murfreesboro). Multiple industry partners needing similar content were necessary to overcome the challenge of sustainability. Ideal Tridon, Wegmann Automotive, and Orchid Internationals' collaboration in this proposal overcomes this barrier to the provision of training, as does the securing of personnel – a project director to tend specifically to the training needs of employers who desperately need precision machinists and

tool and die specialists. Revenue above the cost of the apprenticeship instructors will help support the project director position, as will dual enrollment revenue above costs, and testing fees above cost.

FANUC established prices for their two certification programs to be implemented. The prices for instructor training that this LEAP proposal's FAST training center will charge if eligibility requirements are met are as follows: \$3,500 per week of CERT training and \$5,000/week of IRVISION training. The rates for non-education, industry participants are higher. A *very conservative* estimate of gross income estimating 5 CERT students in attendance weekly for 15 weeks out of the year and 5 IRVISION students in attendance 15 weeks out of the year results in \$637,500 in gross revenue. This amount is more than sufficient to cover FANUC fees, the project director, the administrative assistant cost, the full time instructor, and the cost to reimburse part-time instructors – a pool of which will be created by this grant in collaboration with MTSU. Additional proceeds from this implementation will be used to develop, support, and expand vocational training opportunities that align with future labor force needs. This expansion is intended to occur under the continued oversight of the AM: Troika LEAP steering committee, with the LEAP Troika Collaborative evolving into an entity in which industry, education, and workforce agencies can engage together in a continuous process improvement model.



## References

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## Appendix A

	<b>Advanced Manufacturing: Troika LEAP Project Timeline</b>
<b>Sep-16</b>	Award letters distributed before September 1st
	Steering Committee Meeting on September 8th
	Project Director identified and hired
	Schedule meetings with individual employers and Secondary schools
	Member High Schools determine date for MSSC CPT rollout
	Financial reporting and acquisition procedures and participant reporting requirements are distributed as necessary
	Industry-TCAT collaboration begins planning for implementation of apprenticeship training to commence January
	"Current State," "Desired State," and "continual process improvement model" are presented
	Schedule Webinar with Fanuc re: FAST
<b>Oct-16</b>	Steering Committee Meeting
	Purchase Equipment needed for FANUC certifications
	Project Director works with M-S AMC to identify possible content for Machine Tool and Tool and Die Apprenticeship
	Project Director schedules MSSC conference locally for instructors, and send invitations to regional principals
	Project Director meets with industry to conduct GAP analysis on specific competencies to be included in apprenticeship
	Project Director identifies data tracking methodologies with input from and approval by the steering committee
	Participant data tracking forms are drafted by the Project Director
	Attend Webinar with FANUC re: FAST
	Project Director initiates contact with DOL on behalf of industry seeking a DOL apprenticeship
<b>Nov-16</b>	Steering Committee Meeting
	Project Director (PD) meets with 3 high schools to identify current vs. desired state regarding MSSC STEM labs and equipment
	PD plans for MSSC/secondary school equipment acquisitions
	PD provides webinar on the pros and cons of DOL apprenticeships
	Industry partners choose between DOL-registered or "Special Industry" Apprenticeship
	GAP analysis results are received and reported, first version of 4 year apprenticeship package is proposed
	Apprenticeship instructor hired and briefed
	Equipment for Tool and Die apprenticeship is identified and agreed upon by industry partners

<b>Dec-16</b>	Steering Committee Meeting
	Current and desired state identified
	Equipment acquisitions for MSSC training commence depending on high school readiness
	Equipment and supply Acquisitions for Apprenticeship locked down.
<b>Jan-17</b>	Steering Committee Meeting
	MSSC curriculum purchased from Amatrol for 3 secondary institutions - permanent site licenses
	Identify instructor pool to attend FANUC cert and FANUC IRVision training; schedule instructor training from January-April
<b>Feb-17</b>	Steering Committee Meeting
	Host MSSC training at TCAT-Murfreesboro, Smyrna Campus, for regional secondary and post-secondary instructors
<b>Mar-17</b>	Steering Committee Meeting
	Implement and report, continue toward desired state
	Data collection
	Consider expansion of MSSC to unemployed through Workforce Development Board
	Consider apprenticeship expansion
<b>Apr-17</b>	Steering Committee Meeting
	Deadline for MSSC Instructors to complete curriculum, schedule testing
<b>May-17</b>	Steering Committee Meeting
	Deadline for post-secondary instructors to attend FANUC training
	TCAT-Murfreesboro, registered as Proctor site, will provide instructor testing dates and administer instructor testing
	Hire Full-Time Fanuc Instructor
<b>Jun-17</b>	Steering Committee Meeting
	Implement and report, continue toward desired state
	Data collection
	Consider expansion of MSSC to unemployed through Workforce Development Board
	Consider apprenticeship expansion
<b>Jul-17</b>	Steering Committee Meeting
	Implement and report, continue toward desired state
	Data collection

	Consider expansion of MSSC to unemployed through Workforce Development Board
	Consider apprenticeship expansion
<b>Aug-17</b>	Steering Committee Meeting
	Tentative launch of FAST Training Center pending FANUC approval
	Provide updated sustainability plan to Steering Committee
	Consider present and future sustainability of project director and retain or dismiss
	Delegate responsibilities previously undertaken by the project director
	Create FANUC training schedule for FAST center, schedule grand opening of program
<b>Sep-17</b>	No Steering Committee Meeting
<b>Oct-17 thru Feb-19</b>	Steering Committee Meetings resume bi-monthly, permanently
	Implement and report, continue toward desired state
	Data collection
	Consider expansion of MSSC to unemployed through Workforce Development Board
	Consider apprenticeship expansion
	Update Current State versus Desired State

Draft 1, 7/1/2016, by Charles Wesenberg

# Appendix B

## QUOTATION

TO: TCAT Mufreesboro  
 FROM: Technical Training Aids  
 SUBJECT: Amatrol CPT for LEAP 2.0  
 DATE: 7/25/2006



<u>Model Number</u>	<u>Description</u>	<u>Quantity</u>	<u>Price Each</u>	<u>Total Price</u>
<b>950-CPT1-BXX Available only to High Schools. Education pricing shown below.</b>				
<b>Section 1:</b>	<b>CPT Classroom Install</b>			

950-CPT1	<p>Certified Production Technician Program - 25 Seats          MSSC officially endorsed CPT preparation curriculum. Available for secondary education only. See <a href="http://www.amatrol.com/support">www.amatrol.com/support</a> for computer requirements. Requires 94-CMS-2 Skillace Class Management software.</p>	4	\$40,000.00	\$160,000.00
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Includes PC-based: (1) MSSCOS1 Safety Module; (1) MSSCOQ1 Quality Practices & Measurement Module; (1) MSSCOP1 Manufacturing Processes & Production Module; (1) MSSCOM1 Maintenance Awareness Module.

CPT Instructor Training is required by MSSC. Instructor training fees not included. Refer to [www.msscusa.org](http://www.msscusa.org) for any other instructional materials and instructor training.

<p><b>High School CPT Start-Up In-Kind Donation:</b>The Manufacturing Skill Standards Council (MSSC) strongly supports expansion of the CPT certification for high school students. MSSC is offering an in-kind donation of \$20,000 to offset the startup costs.</p>	4	-	-\$80,000.00
		\$20,000.00	

<b>Section 1 Total:</b>	<b>\$80,000.00</b>
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## Section 2: CPT Hands-On Equipment Enhancement Lab

*High school students often lack practical experience with skills commonly used in industry which is very helpful in both gaining the CPT certification as well as building job-ready confidence. Amatrol offers a CPT equipment lab to augment their certification.*

96-PNE1	<p>Pneumatics 1 Learning System</p> <p>Requires one computer per student and compressed air supply. For computer requirements, see <a href="http://www.amatrol.com/support">www.amatrol.com/support</a>. Recommended table 82-610 Mobile Technology Workstation or equivalent.</p> <p>2-student learning system supplied. To include: (1) 85-BP Basic Pneumatics Trainer; (1) 3/2 Pneumatic Valve; (1) MB780 Student Curriculum -Interactive PC-Based Multimedia; (1) CB780 Teacher's Assessment Guides; (1) DB780 Installation Guide; (1) HB780 Student Reference Guide.</p>	4	\$4,732.00	\$18,928.00
96-MP1	<p>Machine Tools 1 Learning SystemRequires 15707 Machine Tool Package or equivalent Capacity Machine and Hand Tools, Raw Materials (94-RM3, 94-RM6), and computer. See <a href="http://www.amatrol.com/support">www.amatrol.com/support</a> for computer requirements.2-student learning system supplied. Includes: (1) MB701 Student Curriculum - Interactive PC-Based Multimedia; (1) CB701 Teacher's Assessment Guide; (1) DB701 Installation Guide; (1) HB701 Student Reference Guide.</p>	4	\$1,426.00	\$5,704.00
15707	<p>Manual Machine Tool Station</p> <p>Includes: (1) 82-612 Workstation with Maple Block top; (1) Table Mounted Drill Press; (1) Table Mounted Vise; (1) Floor Standing Horizontal/Vertical Band Saw, Metal and Wood; (1) Table Mounted Sander, Metal and Wood; (1) Tooling Set.</p>	4	\$7,475.00	\$29,900.00

96-ADE1	<p>AC/DC Electrical 1 Learning System Requires computer, see <a href="http://www.amatrol.com/support">www.amatrol.com/support</a> for computer requirements. Recommended table 82-610 Mobile Technology Workstation or equivalent.</p> <p>2-student learning system supplied. Includes: (1) T7017 AC/DC Electrical Trainer; (1) MB707 Student Curriculum - Interactive PC-Based Multimedia; (1) CB707 Teacher's Assessment Guide; (1) DB707 Installation Guide; (1) HB707 Student Reference Guide.</p>	4	\$5,106.00	\$20,424.00
96-ECS1	<p>Electrical Control 1 Learning SystemRequires computer and compressed air supply. See <a href="http://www.amatrol.com/support">www.amatrol.com/support</a> for computer requirements. Recommended table 82-610 Mobile Technology Workstation or equivalent.2-student learning system supplied. Includes: (1) 90-EC1A Electrical Control Unit; (1) MB703 Student Curriculum - Interactive PC-Based Multimedia; (1) CB703 Teacher's Assessment Guide; (1) DB703 Installation Guide; (1) HB703 Student Reference Guide.</p>	4	\$3,570.00	\$14,280.00
96-MES1	<p>Measurement Tools 1 Learning System (Quality Assurance) Requires computer, see <a href="http://www.amatrol.com/support">www.amatrol.com/support</a> for computer requirements. Recommended table 82-610 Mobile Technology Workstation or equivalent.</p> <p>2-student learning system supplied. Includes: (1) 91-400 Measurement Tools Level 1; (1) 91-401 Measurement Tools Level 2; (1) 91-410-B Digital Caliper; (1) 91-202 Parts Package; (1) 91-501 Data Management Software; (1) 91-601-B Computer Interface; (1) Table-top Workstation; (1) MB725 Student Curriculum - Interactive PC-Based Multimedia; (1) CB725 Teacher's Assessment Guide; (1) DB725 Installation Guide; (1) HB725 Student Reference Guide.</p>	4	\$4,494.00	\$17,976.00

96-MES2	Measurement Tools 2 Learning System(Quality Assurance) Requires 96-MES1 Unit. Requires computer, see <a href="http://www.amatrol.com/support">www.amatrol.com/support</a> for computer requirements.2-student learning system supplied. Includes: (1) 91-500-A Amatrol SPC Software; (1) MB726 Student Curriculum - Interactive PC-Based Multimedia; (1) CB726 Teacher's Assessment Guide; (1) DB726 Installation Guide; (1) HB726 Student Reference Guide.	4	\$2,871.00	\$11,484.00
96-MPF1	Mechanical Fabrication 1 Learning System Requires compressed air supply and computer. See <a href="http://www.amatrol.com/support">www.amatrol.com/support</a> for computer requirements.  2-student learning system supplied. Includes: (1) Workstation; (1) Construction Panel; (1) Fabrication Parts Kit; (1) Mechanical Parts Kit; (1) Skill Component Set; (1) Pneumatic Kit; (1) Fabrication Tools Kit; (1) M12244 Student Curriculum - Interactive PC-Based Multimedia. (1) C12244 Teacher's Assessment Guide; (1) D12244 Installation Guide; (1) H12244 Student Reference Guide.	4	\$7,123.00	\$28,492.00
96-MEC1	Mechanical Systems 1 Learning System Requires computer, see <a href="http://www.amatrol.com/support">www.amatrol.com/support</a> for computer requirements. Recommended table 82-610 Mobile Technology Workstation or equivalent.  2-student learning system supplied. Includes: (1) 90-M1 Mechanisms Trainer, level 1; (1) 90-M2 Mechanisms Trainer, level 2; (1) MB728 Student Curriculum - Interactive PC-Based Multimedia; (1) CB728 Teacher's Assessment Guide; (1) DB728 Installation Guide; (1) HB728 Student Reference Guide.	4	\$3,196.00	\$12,784.00
TTA Install	Installation of Amatrol Equipment by TTA	4	\$2,000.00	\$8,000.00

**Section 2 Total - Less Options:**

**\$167,972.00**

**Section 2 Options**



950-ME1SB	<p>Mechanical Drives 1 Learning System - Short Bench Requires 41210 Hand Tool Package. Accommodates two (2) students.</p> <p>Includes: (1) Mobile Workstation - 2 Panel; (1) Motor Control Unit; (1) Constant Speed Drive Motor; (1) Variable Speed Motor; (1) Lockout / Tagout Package; (1) Shaft Panel 1; (1) Shaft Panel 2; (1) Belt Drive Panel 1; (1) Gear Drive Panel 1; (1) Chain Drive Panel 1; (1) Prony Brake; (1) Digital Tachometer; (1) Alignment / Measurement Package; (1) Indicator Package Level 1; (1) Multi-Drawer Storage Unit; (1) BB502 Student Learning Activity Packet; (1) CB502 Teacher's Assessment Guide; (1) DB502 Installation Guide; (1) HB502 Student Reference Guide.</p>	4	\$12,457.00	\$49,828.00
95-ME2	<p>Mechanical Drives 2 Learning SystemRequires either the 950-ME1 Mechanical Drives 1 Learning System - Full Bench or the 950-ME1-SB Mechanical Drives 1 Learning System - Short Bench. Also requires 18588 Viscosimeter.Includes: (1) Coupling Panel 1; (1) Belt Drive Panel 2; (1) Belt Drive Panel 3; (1) Lubrication Package; (1) Chain Drive Panel 2; (1) Indicator Package Level 2; (1) BB503 Student Learning Activity Packet; (1) CB503 Teacher's Assessment Guide; (1) DB503 Installation Guide; (1) HB503 Student Reference Guide.</p>	4	\$6,390.00	\$25,560.00
95-ME3	<p>Mechanical Drives 3 Learning System Requires either the 950-ME1 Mechanical Drives 1 Learning System - Full Bench or the 950-ME1-SB Mechanical Drives 1 Learning System - Short Bench. Also requires the 41211 Hand Tool Package.</p> <p>Includes: (1) Roller Bearing Package; (1) Ball Bearing Package; (1) Plain Bearing Package; (1) Gearbox; (1) Seals Package; (1) Right Angle Gear Drive Package; (1) BB504 Student Learning Activity Packet; (1) CB504 Teacher's Assessment Guide; (1) DB504 Installation Guide; (1) HB504 Student Reference Guide.</p>	4	\$6,500.00	\$26,000.00

<b>Product Total - All Sections - Less Options:</b>	<b>\$349,360.00</b>
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<b>Shipping and Handling Charges</b>	<b>\$8,000.00</b>
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<b>Order Total - Including Shipping / Handling Estimate:</b>	<b>\$357,360.00</b>
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**Notes:**

Quote is good for 90 days

Compressed Air and Electric is needed, not included

Computers are to be owner provided

**Technical Training Aids**

Andrew Rittmeier - Sales Representative

Phone:(859) 757-1455 / Fax:(859) 757-0417

P.O. Box 17537

Covington, KY 41017

Birmingham home office: 800-851-3987

## Appendix C – FAST



FANUC America Corporation  
3900 W. Hamlin Road  
Rochester Hills, MI 48309-3253

Telephone: (248) 377-7000  
Customer Service Center: (888)-FANUC-US  
[www.fanucamerica.com](http://www.fanucamerica.com)

## FANUC Authorized Satellite Training (FAST) Program

FANUC America Corporation ("FANUC") is pleased to introduce the FAST program for qualified schools and educational institutions. Schools that currently offer the FANUC Certified Education Robot Training programs or CERT, that meet the following qualification have a unique opportunity to apply for consideration to elevate their program to the next level and become a FANUC Authorized Satellite Training location. With the FAST endorsement, FANUC supports schools in promoting the FANUC Certified Training course offerings to local industry professionals, systems integrators, and end users, in addition to students.

### FAST Requirements:

- ☐ Schools and educational institutions must have a FANUC Certified CERT Instructor(s) on staff that has successfully completed the two (2) FANUC CERT programs:
  - ☐ FANUC Handling Tool Operations & Programming Certification
  - ☐ FANUC 2D iRVision Certification
- ☐ CERT Instructor must be certified in both FANUC Material Handling and FANUC 2D iRVision and delivered courses at the school for a minimum of 12 months
- ☐ Schools and educational institutions must have a minimum of four (4) FANUC Material Handling robots with 2D iRVision or FANUC Material Handling CERT carts with 2D iRVision
- ☐ Robots must be equipped with R30iA, R30iB, or newer controllers
- ☐ The educational institution and CERT instructor must teach students FANUC's curriculum-based training as outlined by the FANUC CERT program
- ☐ The robotic program must utilize FANUC's ROBOGUIDE Simulation software, eLearn, and FANUC training manuals in the robotics training course delivery
- ☐ Schools must be able to demonstrate prior workforce development training experience with local industry

Completion of these requirements earns the school or educational institution an application opportunity to be endorsed and promoted as a FANUC Authorized Satellite Training facility by FANUC on the FANUC America website.

The successful applicant school will be interviewed and visited by a FANUC employee to assure that the applicant school meets all requirements for equipment, facility, instructor, curriculum, and geographic location.

The successful applicant school may qualify for a unique listing of available course offerings, available dates, scheduling, and revenue sharing opportunity that is integrated with FANUC's training department course offerings.

Upon agreement, FANUC will require the school's logo and statement or description of the Certified Robotics program to add to our website.

Upon agreement, FANUC will prepare a press release for each school upon achieving this designation and work with the school's media relations personnel to jointly introduce them as a FAST location.

*Please contact your FANUC Local Education Authorized Reseller to learn more about the FANUC FAST program to see if this is right for your school or contact FANUC at [www.FANUCAmerica.com](http://www.FANUCAmerica.com)*

# BEST PRACTICES: NTWB Partners Establish Certified Production Technician Credentialing in High Schools

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## **Building a Workforce- Ready Pipeline of Young Adults with Skills to Meet Employer Needs**

As the State of Tennessee began to see economic recovery and manufacturing job growth post 2008 recession, the Northwest TN Workforce Board (NTWB) has embarked on several initiatives to meet the needs of local employers. NTWB collaborated with key stakeholders to develop career pathways in manufacturing and showcased these to high school students through onsite tours and various employer presentations. One of the most successful programs has been the Tennessee Labor Education Alignment Program (LEAP) grant, which helps ensure that TN postsecondary institutions are producing the skills and credentials that area employers actually need. Key partners include Dyersburg State Community College, several Tennessee Colleges of Applied Technology, Governor Haslam's Workforce Sub-Cabinet, the Department of Labor and Workforce Development, the Department of Education, the Tennessee Higher Education Commission, the Tennessee Board of Regents, the Department of Economic and Community Development, area high schools, and the employer community in the eleven counties served by NTWB.

The objective of LEAP is to eliminate skills gaps across the state in a proactive, data-driven, and coordinated manner by encouraging collaboration across education and industry and by utilizing regional workforce data to identify and then fill skills gaps across the state. To ensure they have a strong and work-ready pipeline of young adults with skills to meet employer needs, NTWB surveyed local employers to identify workplace needs. Soft skills and basic industry knowledge were identified as weak areas for young workers. NTWB utilizes the ACT® National Career Readiness Certificate (NCRC) assessment as a benchmark for measuring Reading for Information, Locating Information, and Applied Math, and this assessment was deemed appropriate to measure work-readiness for students interested in gaining industrial skills and entering directly into the workplace. In August of 2014, LEAP grant funds allowed NTWB to introduce the MSSC Certified Production Technician Program (CPT) into 17 high schools in 11 counties in rural northwest TN. High school students completing the year-long (LEAP) program have the opportunity to graduate with an NCRC, a credential as a CPT, and up to 12 hours of community college credit or advanced standing in one of Tennessee's Colleges of Applied Technology.

According to Lori Kelley-Burdine, Project Director for LEAP and Director of Public Information & Planning, *"We are finding that those students that took the National Career Readiness Certificate assessment and earned at least a Silver level are more successful in passing the individual modules. For the Safety module, we had a 77% first-time pass rate. In the spring recruitment effort for the fall classes, we will encourage all students to take the NCRC test with the goal of earning a Silver level. We want to ensure they have a solid foundation in reading, applied math, and location information in order to be successful in earning the CPT certifications."*

When LEAP grant funds expire in December 2016, high school students enrolled in CPT Coursework will be offered dual enrollment courses or local dual credit courses through Dyersburg State Community College and local Tennessee Colleges of Applied Technology. Tennessee offers grants for study at eligible postsecondary institutions that are funded from net proceeds of the state lottery. The Dual Enrollment Grant program is funded by the Tennessee Lottery and administered by the Tennessee Student Assistance Corporation. This program provides opportunities for students to begin working toward a college degree, while still pursuing a high school diploma, and encourages post-secondary education and the acceleration of post-secondary attainment. Local dual credit courses are provided through a partnership with an individual postsecondary institution, and students earn credit through an assessment that is developed and/or approved specifically for credit at that institution. The LEAP grant allowed the NWTN Workforce Board to fund instructor certifications for the participating high schools and postsecondary institutions. Moving forward, there should be minimal cost to schools offering the CPT classes as part of their Career and Technical Education curriculum.

*For more information on LEAP, please visit <http://driveto55.org/initiatives/tennessee-leap> and contact Lori Kelley-Burdine, Project Coordinator at [kelley@nwtntworks.org](mailto:kelley@nwtntworks.org) or (731) 286-3585 ext 15.*

## Appendix D – Letters of Support



# TENNESSEE COLLEGE OF APPLIED TECHNOLOGY

MURFREESBORO

1303 Old Fort Parkway • Murfreesboro, TN 37129  
(615) 898-8010 • FAX (615) 893-4194  
[www.tcatmurfreesboro.edu](http://www.tcatmurfreesboro.edu)

July 27, 2016

Paul Haynes  
Executive Director  
Middle Tennessee Workforce Investment Board  
665 Mainstream Drive, Suite 210  
Nashville, TN 37243

Dear Paul Haynes,

The Tennessee College of Applied Technology Murfreesboro (TCATM) strongly supports our partners as expressed in our LEAP proposal, as we progress towards regional program alignment and improvement. TCATM has been working with Nissan to provide advanced manufacturing training to its employees. Additionally, we have worked with Amazon, Ideal Tridon, Wirtgen, and other regional industry partners whose interest we will solicit for this proposal. Our participation in the M-S AMC (the Multi-State Advanced Manufacturing Consortium) has provided us with valuable insights into both the urgency of and methodologies required for aligning education with industry needs.

TCATM considers this to be one of the most important endeavors for our future and the future of all of our regional industrial. We will focus on the development of a multi-skilled maintenance technician and associated curriculum; we will work with our educational (MTSU, RCS) partners to expand on this initiative by including an *advanced* curriculum that includes industry-driven, fault-based scenarios, development of an improvement system guided by learning analytics, robust collaboration between business and higher education, and an expanded knowledge base. The advanced curriculum referenced constitutes the next line of complexity beyond predictive maintenance and troubleshooting and are important issues for the all of industry. Finally, we will help scale its career pathway model within the partnership and continue to expand that membership to create the 21<sup>st</sup> century learning and skills pipeline, advancing seamlessly from RCS, TCAT, and MTSU.

TCATM will continue to participate and commit to supporting our partners with our industrial development manager and instructors, and will provide space and equipment as needed during the development of our partnerships regardless of this proposal's acceptance, but the LEAP grant award will accelerate these initiatives by years. The award will do so by providing resources in the form of advanced equipment and manpower to give undivided attention to the grant initiatives and collaborations.



TENNESSEE COLLEGE  
OF APPLIED TECHNOLOGY  
—MURFREESBORO—

TCATM is proud to be a member of the Middle Tennessee advanced industrial region and is 100% committed to the success and development of a training design that will benefit partner colleges, industrial partners, and the recovery of the economy of the United States of America.

TCATM has a strong working partnership with the Middle Tennessee Workforce Investment Board and I serve on their advisory committee. This project builds on this long-term relationship with several members of this strategic partnership. This includes: a strong working partnership with the Middle Tennessee Workforce Investment Board and I serve on their advisory committee; an established educational program with Amazon employees, at Nissan in Smyrna, the TCATM/Nissan Apprenticeship program and at our Murfreesboro campus; an educational outreach partnership with MTSU and the surrounding K-12 schools. The mechatronics program at Siegel High School will be used as a model for regional high schools.

This program builds on TCATM's role as a national leader in advanced manufacturing education and supports the intent of the LEAP program and the federal designation of the Tennessee Valley as one of two national locations for advanced manufacturing in the automobile industry.

TCATM agrees to be the fiscal agent of this project, coordinate the development/alignment of educational programs with industry and input from the steering committee, participate in outreach activities, ensure that the best practices learned from this project will be incorporated into the TCATM/Nissan Training Center and provide time for the TCATM director or designee to be a member of the steering committee.

Sincerely,

Dr. Lynn C. Kreider, Director  
Tennessee College of Applied Technology Murfreesboro.





FANUC America Corporation.  
3900 West Hamlin Road  
Rochester Hills, Michigan 48309-3253  
[www.fanucrobotics.com](http://www.fanucrobotics.com)

July 27, 2015

Charles Wesenberg  
TCAT - Murfreesboro  
[cwesenberg@tcatmurfreesboro.edu](mailto:cwesenberg@tcatmurfreesboro.edu)

**RE: Certified Education Robot Training Program**

Dear Mr. Wesenberg,

This letter is to confirm that the FANUC America Corporation (hereinafter FANUC) **Certified Education Robot Training** program (including the LR Mate 200iD/4S robot with iR Vision, educational tooling package and MH CERT Program) is an exclusive offer for TCAT Murfreesboro. We are committed to provide the CERT program to each new location, which provides over \$300,000 in gift of in-kind training, eLearn, curriculum, simulation software and instructor teaching tools.

This training platform and instructor certification training provides students and instructors with curriculum and instructional guides. FANUC CERT program can only be purchased from Technical Training Aids (TTA) and is only offered to educational institutions. The sale price offered to your school is significantly discounted from the price that would be offered to a commercial or industrial customer and shows TTA's commitment to supporting technical education. FANUC offers U.S. based manufacturing that includes robots, simulation software and product development. The FANUC CERT program is being provided by TTA, an exclusive Education Authorized Reseller for the state of Tennessee.

FANUC is pleased to be a partner along with TTA on this opportunity for TCAT Murfreesboro. The **Advanced Manufacturing: Troika Leap Grant** would allow schools to strengthen their relationship with local industry in **Bedford, Cannon, Rutherford and Wilson Counties**, by providing the students with the knowledge to obtain high paying careers in Advanced Manufacturing – Robotics and Automation.

Respectfully,

Paul Aiello  
Director  
CERT Education

**FANUC America Corporation**

Office 248.377.7288 / Cell 248.894.3543

Fax 866.857.9254

[Paul.aiello@fanucamerica.com](mailto:Paul.aiello@fanucamerica.com)

*Industry Certified Robot and Automation Training*

**College of Basic and Applied Sciences**

161 Jones Hall  
MTSU P.O. Box 83  
Murfreesboro, Tennessee 37132  
Office: (615) 898-2613  
Fax: (615) 898-2615



July 25, 2016

Paul Haynes  
Executive Director  
Middle Tennessee Workforce Investment Board  
665 Mainstream Drive, Suite 210  
Nashville, TN 37243

Dear Paul Haynes,

As Dean of the College of Basic and Applied Science at Middle Tennessee State University (MTSU), I am pleased to support MTSU's participation as a partner on this LEAP proposal.

MTSU has a history of meeting industries needs in manufacturing. Our BS program in Mechatronics Engineering was created in spring 2014 as a result of several companies including Nissan North America, Bridgestone/Firestone and Yates Services approaching the Tennessee Board of Regents and formally requesting a program in Mechatronics Engineering at the Bachelor's level. Industry requested the program because unfilled mechatronics positions adversely affect their capabilities in the region. Since this program began, MTSU has worked hard to establish articulation agreements with pre-engineering and mechatronics programs at Columbia State, Nashville State, and Motlow State Community Colleges and collaborated on outreach to K-12 schools with TCAT Murfreesboro.

This project supports MTSU's efforts to establish and grow the Mechatronics Engineering program and involves mechatronics faculty members. MTSU participants are exceptional qualified to participate in this project by providing professional development to TCAT Murfreesboro faculty, high school career and technical education (CTE) teachers and engaging middle and high school students in activities to support career interests in advanced manufacturing. MTSU faculty will benefit from attending the industry certification training opportunities described in this proposal.

As dean of the college, I will help ensure the success of this LEAP proposal. I or my designee will serve on the steering committee leading this project, supporting efforts to broaden the reach to interested community colleges, K-12 schools, parents and companies in the region.

Sincerely,

A handwritten signature in cursive script that reads "Bud Fischer".

Robert "Bud" Fischer, Ph.D.  
Dean





Multi-State  
Advanced Manufacturing Consortium  
US DOL SPONSORED

HENRY  
FORD  
COLLEGE  
FUTUREDRIVEN

TAACCCT GRANT: TC23767

**Letter of Support/Commitment for the TCAT – Murfreesboro TN 06/30/2016**

Please recognize this document as formal support/commitment from the Multi-State Advanced Manufacturing Consortium (M-SAMC) to support work described in the TCAT – Murfreesboro TN proposal for a LEAP grant. The work complements our national efforts to better align Manufacturing Education with Industry requirements, and to accelerate the training necessary to provide workers with urgently needed skills.

M-SAMC is improving manufacturing education to better meet industry and student needs by using standard assessments, competency-based education, continuous improvement, and strategic national partnership development. During the first three years our consortium:

- Developed common Performance Based Objectives, curricula, courses, and contexts for delivery of “New Model” manufacturing education aligned directly with industry needs
- Implemented common Integrated Manufacturing System Simulators in “Industry Like” labs radically improving our ability to educate students in real time dynamic troubleshooting on the same equipment used currently by industry
- Developed manufacturing education “hands-on” assessment projects that prepare students and workers to better support their employers in a highly competitive market

We commit to support T-CAT Murfreesboro’s LEAP Grant initiative through provision of:

- Steering Committee Membership and Participation
- Consultation/Guidance on implementing Bridge to Career strategies (like MSSC’s CPT)
- Access to Performance Based Objectives aligned with industry needs, gap analysis tools and reports, and tools for further program development and continuous improvement
- Flexible curriculum, digital content and hands-on project templates to enable improved assessment, accelerated skill attainment and expedited apprenticeship completion
- Guidance on Competency-Based Training to include Work-based Learning (specifically, apprenticeship development) using PBO’s and GAP analysis
- Provision of a 3-day workshop at the TCAT-Murfreesboro Training Center (cost reimbursement requested) to provide instruction on use of the above tools

Our commitment to support this initiative will help ensure proposal success and help to further drive the required improvement for manufacturing education nationally. Thank you.

Scott F Jede

**M-SAMC Program Manager – Industry**

Callan E Eschenburg II

**M-SAMC Assistant Program Manager**

[www.msamc.org](http://www.msamc.org)



**MANUFACTURING  
SKILL STANDARDS  
COUNCIL**

**Executive Board**

**Chairman**  
**Leo Reddy**  
CEO  
MSSC

**Secretary**  
**Bryan Albrecht**  
President  
Gateway Technical College

**Treasurer**  
**Michael Packer**  
VP, Manufacturing Strategy  
Lockheed Martin Company

**Members**  
**Mary Batch,**  
Training Manager  
Toyota San Antonio

**Steve Boecking**  
Vice President  
Hillwood Properties

**Jan Bray**  
Chief Strategist  
Bray Associates

**Kim Green**  
Executive Director  
Nat'l Assn State Directors  
CTE

**Andrew R. Ginger**  
President, Industrial  
Snap-on, Inc.

**Don, Gogan**  
VP, Materials Management  
Harley-Davidson Motor  
Company

**Sherman Johnson**  
Executive Director,  
Corporate College  
Ivy Tech Community  
College

**Harry Moser,**  
Founder and President,  
Reshoring Initiative

**Ron Painter**  
CEO  
NAWB

**Neil Reddy**  
Executive Director  
MSSC

**Sylvia Wetzel**  
Chief Learning Officer  
Bison Gear & Engineering

July 27, 2016

Mr. Curt Johnson  
Tennessee Higher Education Commission  
404 James Robertson Parkway, Suite 1900  
Nashville, TN 37243

Dear Mr. Johnson,

The Manufacturing Skill Standards Council (MSSC) is pleased to support the proposal for *the Advanced Manufacturing: Troika LEAP Collaborative*. We see the LEAP Collaborative at TCAT-Murfreesboro as an important part of a career pathway that will strengthen the skills of our production workforce, making them more proficient at production jobs and preparing them for more advanced training. This proposal will utilize the MSSC System of training, assessment and certification which is based upon industry-defined, federally-endorsed national skill standards.

The incorporation of MSSC Certified Production Technician (CPT) industry-recognized credentials within the secondary programming in TN will demonstrate to our employers a gold standard of quality and a level of commitment from students that can demonstrate they have the foundational skills needed to successfully secure a job in advanced manufacturing or go on to higher level of post-secondary education.

**MSSC has agreed to provide a discount identified in this grant proposal budget to high schools, provide informal support to the project director, Charles H. Wesenberg IV, attend steering committee meetings as a steering committee member, and send an MSSC master trainer to provide in-person instructor training to *Troika Leap Collaborative* instructors at the price quoted in the enclosed budget.**

MSSC's nationally recognized, industry-led skill standards serve as the foundation for their MSSC course modules (Safety, Quality Practices & Measurement, Manufacturing Processes & Production, and Maintenance Awareness) required to earn Certified Production Technician (CPT). MSSC CPT Courses, powered by Amatrol, are highly interactive and utilize state-of-the-art, computer-based, simulation e-learning technologies. These courses have been reviewed by the NCCRS (National College Credit Recommendation Service) and have earned a college credit recommendation of 3 credits per module for a total of 12 credits. This effort will help students obtain or keep employment while simultaneously gaining college credits.

On behalf of the Manufacturing Skill Standards Council, I confirm my commitment to support advancement of the *Advanced Manufacturing: Troika LEAP Collaborative* grant proposal.

Sincerely,

Leo Reddy  
MSSC CEO



# Wilson Central High School

419 Wildcat Way, Lebanon, TN 37090  
(615)453-4600 (615)453-4610 (Fax)

**Principal:**

Travis Mayfield

**Assistant Principals:**

Chip Bevis

Kevin Dawson

Jason Franklin

Missi Oakley

**Charles H. Wesenberg IV**

[cwesenberg@tcatmurfreesboro.edu](mailto:cwesenberg@tcatmurfreesboro.edu)

*Manufacturing Program Implementation Coordinator*

Tennessee College of Applied Technology - Murfreesboro

(615) 898-8010 Ext. 129

Dear Mr. Wesenberg,

As principal of Wilson Central High School, I would be honored to participate in the advanced manufacturing LEAP proposal you are submitting. This program will assist our STEM teachers in implementing the Fanuc LR Mate 200iD/4S Education Training CERT Package 1.1 that we are adding to the curriculum in Wilson County this year. Our students will benefit from this new opportunity and may enable them to participate in an apprenticeship program associated with Work Base Learning.

Sincerely

Travis Mayfield, Principal  
Wilson Central High School



Steve Petty  
Career & Technical Education Director  
Bedford County Board of Education, District #020  
100 J.G. Helton Drive  
Shelbyville, TN 37160

July 27, 2016

Charles H. Wesenberg  
Manufacturing Program Implementation Coordinator  
Tennessee College of Applied Technology – Murfreesboro  
1303 Old Fort Parkway, Murfreesboro, TN 37129

Dear Mr. Wesenberg,

As CTE Director of Bedford County Schools and in consideration of the benefits to the teacher and students of our Manufacturing Program of Study (POS), I am pleased to collaborate on the LEAP grant that you propose. Teacher training is an essential element in implementation of any POS. I was pleased that the abstract of this grant proposal includes provisions for key teacher training. Bedford County was able to pilot Certified Production Technician (CPT) training on a limited basis this past year. Our Advanced Manufacturing teacher is currently certified by the Manufacturing Skills Standards Council (MSSC) and we are a MSSC testing center. This grant would allow us to expand our efforts in this area and reach more students.

We strongly believe that this project will make a difference and help us to create additional opportunities for our students. Thank you for considering Bedford County Schools for inclusion in this project.

Sincerely,

A handwritten signature in dark ink, appearing to read "Steve Petty", written over a horizontal line.

Steve Petty, CTE Director  
Bedford County Board of Education, District #020  
100 J.G. Helton Drive  
Shelbyville, TN 37160  
Office: 931-684-1889 x 3421  
Fax: 931-684-9355



*Cannon County High School*  
*One Lion Drive*  
*Woodbury, TN 37190*  
*Telephone (615) 563-2144 Fax: (615) 563-2238*

*Mike Jones*  
*Principal*

*Kay Barker*  
*Assistant Principal*

July 25, 2016

Paul Haynes  
Executive Director  
Middle Tennessee Workforce Investment Board  
665 Mainstream Drive, Suite 210  
Nashville, TN 37243

Dear Paul Haynes,

As director of the Career and Technical Education (CTE) program in Cannon County Schools, I am pleased to partner on the advanced manufacturing LEAP proposal being submitted by the Middle Tennessee Workforce Investment Board. This project is important to our district's CTE program. The Cannon County teachers involved in this project will benefit from the professional development opportunities and access to industry and higher education faculty. The information on manufacturing careers pathways will be very beneficial to our students. Partnering with companies on this project will strengthen our Career and Technical Education (CTE) program and increase the number of students enrolling in CTE courses, participating in after-school technological programs and robotics competitions, and interested in attending TCAT Murfreesboro's manufacturing programs. This is very timely since most of our high school seniors have signed up for Tennessee Promise program to attend a community college or TCAT.

Our district will encourage students, parents and teachers to participate in this program. We have begun a high school robot team that competed in the BEST robot competition sponsored by Nissan and are we are exploring the possibilities of offering manufacturing CTE courses at Cannon County High School. I look forward to sharing information with my district about how these CTE courses are taught and the impact on student involved in this project in Rutherford County Schools. This will be very important information to share with our districts decision makers. As the Cannon County CTE director, I will represent the district's CTE programs on both the LEAP education and steering committee. I appreciate the opportunity to participate in this program.

Sincerely,

Courtney Nichols  
Director, Cannon County School CTE Programs

# Wilson County Schools

Excellence in all we do

William H. Moss, Captain USAR (Ret.)  
Career Technical Education Supervisor  
351 Stumpy Lane  
Lebanon, Tennessee 37090

---

Telephone (615) 444-3282  
Fax (615) 443-8745

**Charles H. Wesenberg IV**

[cwesenberg@tcatmurfreesboro.edu](mailto:cwesenberg@tcatmurfreesboro.edu)

*Manufacturing Program Implementation Coordinator*

Tennessee College of Applied Technology - Murfreesboro  
(615) 898-8010 Ext. 129

Dear Mr. Wesenberg,

As director of the Career and Technical Education (CTE) Program in Wilson County Schools, I am pleased to participate in the advanced manufacturing LEAP proposal you are submitting. This program will assist our STEM teachers in implementing the Fanuc LR Mate 200iD/4S Education Training CERT Package 1.1 that we are adding to the curriculum in Wilson County this year. Our students will benefit from this new opportunity and may enable them to participate in an apprenticeship program associated with Work Base Learning.

Sincerely

William H. Moss  
Captain, USAR (Retired)  
CTE Supervisor Wilson County Schools



Orchid International  
94 Belinda Parkway  
Mt. Juliet, TN 37122  
(615) 773.3331

[www.orchidinternational.com](http://www.orchidinternational.com)



July 26, 2016

Tennessee College of Applied Technology-Murfreesboro

Subject: Labor Education Alignment Program Grant

Orchid International in Mt. Juliet is in need of employees for skilled trade positions: Tool & Die, CNC Machinists, etc. Unfortunately, there is a serious lack of candidates with the proper training for these positions in Middle Tennessee. As we continue to promote and educate students on the opportunities available and the need for students to enroll in skilled trade classes, the 2016 LEAP Grant will enable students to reach goals that would otherwise not be available to them.

Programs such as the ones offered by TCAT, with the help of manufacturing partners such as Orchid, will insure the future of manufacturing in Tennessee. We look forward to working with TCAT to find new talent to fill the shortage of skilled trade people in Middle Tennessee. A well trained skilled workforce is a major draw for any new manufacturing company. The future growth of manufacturing in Tennessee is only limited by the skill of the workforce, and any program that helps to build the skills needed, will be greatly supported by Orchid.

Sincerely,

**Bill Jones**

Director of Operations

Direct Phone / Fax: (615) 773-3319



94 Belinda Parkway  
Mt. Juliet, TN. 37122

[www.orchidinternational.com](http://www.orchidinternational.com)

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July 26, 2016

Tennessee College of Applied Technology - Murfreesboro TN

When people talk about automotive manufacturing today, they no longer only think about Detroit. Car builders started moving south in the 80's and Tennessee has seen a huge benefit from that move. Building cars takes skilled trade workers to maintain the tooling and equipment required to build vehicles. Training in the skilled trades has lagged behind the shift in manufacturing. The importance of going to college has been pushed so hard over the last twenty years that a lot of key programs fell to the wayside. The need for programs such as the ones that are offered by TCAT are critical to the future of manufacturing in Tennessee.

Orchid International is an automotive stamping and assembly plant. We are tier one to General Motors and tier two to many other OEM's. Orchid is on the cutting edge of tool and machine building, and the need for specialized skilled trades' people is great. Over the last ten years we have seen a terrible down turn in the economy that hit the manufacturing sector very hard, and a recovery like no one could have expected. The growth experienced in the last six years have brought to light the need for training programs to help start young people down the path of a vocation.

Programs such as the ones offered by TCAT, with the help of manufacturing partners such as Orchid, will insure the future of manufacturing in Tennessee. We look forward to working with TCAT to find new talent to the fill shortage of skilled trade people in Middle Tennessee. A well trained skilled workforce is a major draw for any new manufacturing company. The future growth of manufacturing in Tennessee is only limited by the skill of the workforce, and any program that helps to build the skills needed will be greatly supported by Orchid.

Sincerely,

**Norma McClard**

Manager Human Resources and Safety  
Direct Phone / Fax: (615) 773-3331



94 Belinda Parkway  
Mt. Juliet, TN. 37122  
[www.orchidinternational.com](http://www.orchidinternational.com)



July 25, 2016

Tennessee College of Applied Technology  
1303 Old Fort Pkwy.  
Murfreesboro, TN 37129

To whom it may concern:

I am writing to express support for Tennessee College of Applied Technology's application for the Advanced Manufacturing: LEAP Troika Collaborative. The proposed program will improve our Tool and Die department at Wegmann automotive USA Inc. Our vision includes having a working relationship that provides on the job training as well as classroom instruction at a local school such as Tennessee College of Applied Technology - Murfreesboro. A local program will allow training without the additional travel to Nashville.

Wegmann automotive USA Inc. is pleased to continue a relationship with Tennessee College of Applied Technology in support of the Tool and Die Maker Apprenticeship program. This program will be valuable to the continuing efforts that Wegmann automotive USA Inc. is making to increase our skill set in the Tool and Die area.

Wegmann automotive USA Inc. has partnered with Tennessee College of Applied Technology in the past to develop our current workforce and selection tools. We will commit to the Tool and Die Maker apprenticeship program by the involvement of our personnel, financial resources, training facilities, etc. It is clearly a priority for us, and our workers and community will be served.

In closing, I would like to say that I am proud that Wegmann automotive USA Inc. and Tennessee College of Applied Technology have embraced this project. We are pleased to continue a relationship that is beneficial to us and to Tennessee College of Applied Technology.

Sincerely,

*Julie Darnell*

Julie Darnell  
Human Resources Manager  
Phone: (615)849-4448  
Email: Julie.darnell@wegmann-automotive.com

**WEGMANN automotive USA Inc.**

Headquarters:  
1715 Joe B. Jackson Parkway  
Murfreesboro, TN 37127  
Toll-Free 800-251-1566  
Local 615-893-0643  
Fax 615-641-3969

West Coast Distribution:  
1498 Kleppe Lane  
Sparks, NV 89431  
Toll-Free 800-824-8941  
Local 775-359-4200  
Fax 775-359-4288

**WEGMANN automotive Canada Inc.**

Headquarters:  
19 Frankford Crescent, Unit #3  
Trenton, Ontario K8V 5R7 Canada  
Local 613-394-8710  
Fax 613-394-8712





July 27, 2016

Charles H. Wesenberg IV  
MBA, M.A. Human Behavior, B.A. English  
Manufacturing Program Implementation Coordinator  
Tennessee College of Applied Technology – Murfreesboro  
1303 Old Fort Parkway Murfreesboro, TN 37129

Dear Charles,

Cecil Norris, Toolroom Mgr. and I, Mike Henderson, HR mgr. /Bob Gascoigne-Ops. Mgr. are willing to participate on the LEAP Steering Committee to develop a Tool & Die Program.

Setting up the program requirements will require input from other employers and, if possible, it will be important to customize the program requirements around the needs of the local community.

We look forward to participating in developing the program and please contact me when you are ready to start.

Sincerely,

Mike Henderson,  
HR Mgr.

615-423-2490

## Appendix E – Budget

### Grant Budget

**Advanced Manufacturing: Troika LEAP  
Collaboration**

**Applicable Period: September 14th, 2016-March 13th, 2019**

<b>POLICY 03 Object Line-item Reference</b>	<b>EXPENSE OBJECT LINE-ITEM CATEGORY</b>	<b>GRANT CONTRACT</b>	<b>GRANTEE PARTICIPATION</b>	<b>TOTAL PROJECT</b>
1,2	Salaries, Benefits & Taxes	\$ 209,879.15		\$ 209,879.15
4,15	Professional Fee, Grant & Award	\$ 170,270.00		\$ 200,270.00
5, 6, 7, 8, 9, 10	Supplies, Telephone, Postage & Shipping, Occupancy, Equipment Rental & Maintenance, Printing and Publications	\$ 4,000.00		\$ 4000.00
11,12	Travel, Conference & Meetings	\$ 15,000.00	\$ 18,000.00	\$ 33,000.00
13	Interest			\$ -
14	Insurance			\$ -
16	Specific Assistance			\$ -
17	Depreciation			\$ -
18	Other Non-Personnel			\$ -
20	Capital Purchase	\$ 599,734.00		\$ 569,734.00
22	Indirect Cost			\$ -
24	In-Kind Expense		\$ 360,000.00	\$ 350,000.00
25	<b>Grand Total</b>	\$ 998,883.15	\$ 378,000.00	\$ 1,376,883.15

## Appendix F – Budget Line Items

Line 1	Salaries and Wages	Monthly	Total months	Total	Running Total
	\$ 88,472.00 Annual Salary Director I	\$ 7,372.67	18	\$ 132,708.00	
	Annual Salary Master				
	\$ 57,475.00 FANUC Instructor	\$ 4,789.58	6	\$ 28,737.50	
				<b>\$ 161,445.50</b>	<b>\$ 161,445.50</b>
Line 2	<b>Employee Benefits and Payroll Taxes</b>				
	Director	\$ 2,211.80		\$ 39,812.40	
	Instructor	\$ 1,436.88		\$ 8,621.25	
				<b>\$ 48,433.65</b>	<b>\$ 209,879.15</b>
Line 4	<b>Professional Fees (See Appendices B, G, and H)</b>				
	MSSC curriculum for high schools			\$ 80,000.00	
	FANUC Instructor certifications			\$ 51,000.00	
	MSSC Instructor Certifications			\$ 39,270.00	
				<b>\$ 170,270.00</b>	<b>\$ 380,149.15</b>
Line 5	<b>Supplies</b>				
	Food for Workshops			\$ 3,000.00	
	Conferencing and Financial software			\$ 1,000.00	
				<b>\$ 4,000.00</b>	<b>\$ 384,149.15</b>
Line 11	<b>Travel</b> All education partners at all levels will be responsible for the travel and per diem costs for sending instructors to training. This cost will be bore by participating educational institutions: \$18,000 projected.				
Line 12	<b>Conferences and Meetings</b>				
	M-S AMC Workshop - 3 days			\$ 15,000.00	
	See M-S AMC's Letter of Commitment to learn what will be taught in this workshop.			<b>\$ 15,000.00</b>	<b>\$ 399,149.15</b>

Line 19	<b>Capital Equipment</b> <i>(See Appendices B, G, and H)</i>		
	Woodbury - Amatrrol/MSSC Labs	\$ 92,453.33	
	Cannon - Amatrrol/MSSC Labs	\$ 92,453.33	
	Bedford - Amatrrol/MSSC Labs	\$ 92,453.33	
	MTSU - Fanuc Robots/FAST	\$ 96,958.00	
	TCAT-Murfreesboro - Fanuc Robots/FAST	\$ 195,416.00	
	WBL Equipment - Tool and Die/Machining	\$ 30,000.00	
		<b>\$ 599,734.00</b>	<b>\$ 998,883.15</b>

Line 24	<b>In-kind expenses</b>		
	FANUC will include \$300,000 of value in implementing the FAST training center. MSSC has discounted their curriculum 50% to support this project.		
	FANUC: \$300,000		
	MSSC: \$60,000		
Line 25	<b>Total Expenses</b>		<b>\$ 998,883.15</b>


## Appendix G

TO: TCAT Mufreesboro  
 FROM: Technical Training Aids  
 SUBJECT: Robotic Industry Certification  
 DATE: 6/29/2016

# FANUC

Item	Description	Qty	Price	Total
	<b>Fanuc LR Mate 200iD/4S Education Training CERT Package</b>			
1.1	DFR2CR30001 LR Mate 200iD/4S Robot with R-30iB Mate Controller	4	\$ 28,054.00	\$ 112,216.00
	Includes:			
	A – Six Axis Mechanical Robot			
	B – R-30iB Mate Controller - Vision ready			
	(does not include optional camera (D), cables, curriculum or training)			
	B – LR HandlingTool Software-CERT configuration			
	(includes: DCS, Collision Guard & 4D graphics)			
	C – MH iPendant with Touch Screen - R-30iB Mate			
	DFR2CR30002 MH1 Education Training Cart	4	\$ 7,000.00	\$ 28,000.00
	Includes:			
	E – Mobile Training Safety Enclosure			
	F – Education Tooling Package			
	G – 120VAC Transformer			
	H – 4.6 Gal. Ultra Quiet Air Compressor			
	DFR2CR30003 MH CERT Program & Software Package	1	\$ 7,000.00	\$ 7,000.00
	Includes:			
	Instructor MH CERT Training Program & Software Package			
	I – MH Certification & MH Factory Training Program			
	J – ROBOGUIDE Simulation Software (Laptop not included)			
	K – MH eLearn Web Courses			
	School MH Software Package (12 month subscriptions of each)			
	J – Qty (25) ROBOGUIDE Software for school computers			
	K – Qty (25) MH eLearn Web Courses for the students			
	DFR2CR30004 Set of Instructor Manuals	1	N/A	Included
	Includes:			
	(1) Robot Operations - MATGGROOP1114CE			
	(1) HandlingTool Operations & Programming - MATAGHAND0213CE			
	(1) HandlingPro (ROBOGUIDE) - MATOGHPR21109CE			
			Net Total	\$ 147,216.00
	One Time Educational Grant when all items above purchased at once	1	\$ (7,000.00)	\$ (7,000.00)
	<b>Educational Package Total (No options included)</b>			<b>\$ 140,216.00</b>



Item	Description	Qty	Price	Total
<b>Robot CERT Options</b> - Not Included, add as needed - See item descriptions				
1.6.1	Set of (3) FANUC Robot Manuals	4	\$300.00	\$ 1,200.00
1.6.2	Project Based Robot Application – Battery Package (requires iRVision)	2	\$4,100.00	\$ 8,200.00
1.6.4	Robot Operations Manual - MATGGROOP1114CE	4	\$100.00	\$ 400.00
1.6.5	HandlingTool Operations & Programming Manual - MATAGHAND0213CE	4	\$100.00	\$ 400.00
1.6.6	HandlingPro (ROBOGUIDE) Manual - MATOGHPR21109CE	4	\$100.00	\$ 400.00
1.6.7	iRVision 2D Manual – MATVIR2DB0513CE	4	\$100.00	\$ 400.00
1.6.13	Additional Instructor CERT Program, (with cart)	3	\$3,500.00	\$ 10,500.00
1.6.14	Instructor 2D iRVision CERT Program, (with cart)	3	\$5,000.00	\$ 15,000.00
1.8.1	Fixed or Carried iRVision 2D Guidance Hardware & Software	4	\$4,000.00	\$ 16,000.00
1.9.1	Fixed or Carried Vision Light Kit – LR Mate Robot	4	\$675.00	\$ 2,700.00
<b>Notes:</b> Educational I  tions included)				<b>\$ 195,416.00</b>

## Appendix H

TO: TCAT Mufreesboro  
 FROM: Technical Training Aids  
 SUBJECT: Robotic Industry Certification  
 DATE: 6/29/2016

# FANUC

Item	Description	Qty	Price	Total
	<b>Fanuc LR Mate 200iD/4S Education Training CERT Package</b>			
1.1	DFR2CR30001 LR Mate 200iD/4S Robot with R-30iB Mate Controller Includes: A – Six Axis Mechanical Robot B – R-30iB Mate Controller - Vision ready <i>(does not include optional camera (D), cables, curriculum or training)</i> B – LR HandlingTool Software-CERT configuration <i>(includes: DCS, Collision Guard &amp; 4D graphics)</i> C – MH iPendant with Touch Screen - R-30iB Mate	2	\$ 28,054.00	\$ 56,108.00
	DFR2CR30002 MH1 Education Training Cart Includes: E – Mobile Training Safety Enclosure F – Education Tooling Package G – 120VAC Transformer H – 4.6 Gal. Ultra Quiet Air Compressor	2	\$ 7,000.00	\$ 14,000.00
	DFR2CR30003 MH CERT Program & Software Package Includes: Instructor MH CERT Training Program & Software Package I – MH Certification & MH Factory Training Program J – ROBOGUIDE Simulation Software (Laptop not included) K – MH eLearn Web Courses School MH Software Package (12 month subscriptions of each) J – Qty (25) ROBOGUIDE Software for school computers K – Qty (25) MH eLearn Web Courses for the students	1	\$ 7,000.00	\$ 7,000.00
	DFR2CR30004 Set of Instructor Manuals Includes: (1) Robot Operations - MATGGROOP1114CE (1) HandlingTool Operations & Programming - MATA GHAND0213CE (1) HandlingPro (ROBOGUIDE) - MATOGHPR21109CE	1	N/A	Included
			Net Total	\$ 77,108.00
One Time Educational Grant when all items above purchased at once			1 \$ (7,000.00)	\$ (7,000.00)
<b>Educational Package Total</b> (No options included)				<b>\$ 70,108.00</b>

Item	Description	Qty	Price	Total
	<b>Robot CERT Options</b> - Not Included, add as needed - See item descriptions			
1.6.1	Set of (3) FANUC Robot Manuals	2	\$300.00	\$ 600.00
1.6.2	Project Based Robot Application – Battery Package (requires iRVision)	1	\$4,100.00	\$ 4,100.00
1.6.4	Robot Operations Manual - MATGGROOP1114CE	2	\$100.00	\$ 200.00
1.6.5	HandlingTool Operations & Programming Manual - MATAGHAND0213CE	2	\$100.00	\$ 200.00
1.6.6	HandlingPro (ROBOGUIDE) Manual - MATOGHPR21109CE	2	\$100.00	\$ 200.00
1.6.7	iRVision 2D Manual – MATVIR2DB0513CE	2	\$100.00	\$ 200.00
1.6.13	Additional Instructor CERT Program, (with cart)	2	\$3,500.00	\$ 7,000.00
1.6.14	Instructor 2D iRVision CERT Program, (with cart)	1	\$5,000.00	\$ 5,000.00
1.8.1	Fixed or Carried iRVision 2D Guidance Hardware & Software	2	\$4,000.00	\$ 8,000.00
1.9.1	Fixed or Carried Vision Light Kit – LR Mate Robot	2	\$675.00	\$ 1,350.00
<b>Notes:</b>	<b>Educational Package Total (with Vision options included)</b>			<b>\$ 96,958.00</b>

## Appendix I – MSSC Information

# MSSC Overview

---



The Manufacturing Skill Standards Council (MSSC) is the nation's leading industry-led training, assessment and certification organization focused on the **core technical competencies** needed by the nation's frontline production and material handling workers. The nationwide MSSC certifications, based upon industry-defined and federally-endorsed national standards, offer both entry-level and incumbent workers the opportunity to demonstrate that they have acquired the knowledge and skills increasingly needed in the technology-intensive advanced manufacturing and logistics jobs of the 21st century. MSSC applies to all frontline manufacturing production jobs (6 million) and all front-line material handling and distribution jobs (6.1 million). MSSC has developed two nationally portable certifications for this workforce:

**Certified Production Technician (CPT):** The CPT Certification addresses the core technical competencies of higher skilled production workers in all sectors of manufacturing. MSSC awards certificates to individuals who pass any of its five Production Modules: Safety, Quality Practices & Measurement, Manufacturing Processes & Production, Maintenance Awareness and Green Production and a full CPT Certification to those who pass all four core modules (Note: Green is not required for full-CPT certification.)

**Certified Logistics Technician (CLT):** The CLT Certification addresses the core technical competencies of higher skilled, frontline material handling workers in all supply chain facilities: in factories, warehouses, distribution centers and transportation companies. MSSC awards the foundational-level Certified Logistics Associate (CLA) certificate and the mid-level CLT certification. CLA is a prerequisite for CLT.

**CPT and CLT are both accredited under ANSI-ISO 17024 (Personnel Certification). MSSC is the only national certification body globally with this designation for manufacturing and logistics.**

**"20/20" Vision:** Approved by its Board in 2010, MSSC's vision is to credential 20% of individuals entering or employed in the nation's front-line manufacturing production and material handling workforce in 20 years—2.4 million workers by 2030. To achieve that goal, MSSC offers industry a new set of tools to ensure that both entering and incumbent workers are flexible, easily trainable, and highly motivated *knowledge workers* able to keep pace with technological change—the **"Industrial Athlete of the Future."**

## **MSSC benefits to employers include:**

- A pipeline of skilled workers by embedding MSSC certification training into schools
- Decreased recruitment costs by providing job candidates with industry-recognized credentials
- Elimination of remedial training costs by providing well prepared workers
- A new ISO standard in certificates companies can use as a common practice throughout their global operations
- Increased ROI for training by targeting it against the gaps identified by the MSSC Diagnostic Tool
- An aid to attracting, motivating and retaining qualified employees

The federal National Skill Standards Board formally recognized MSSC as the standards and certification "Voluntary Partnership" for all manufacturing sectors in 1998 and officially endorsed MSSC's national standards in 2001 which were developed and nationally validated by 700 companies, 378 educational organizations and most industrial unions. MSSC has since been used by the U.S. Departments of Labor, Education, Defense and Veterans Affairs, as well as Job Corps and both Federal and State Prison Systems. MSSC is a Founding Partner in the National Association of Manufacturers (NAM)-endorsed Skills Certification System, which has endorsed both CPT and CLT.

MSSC provides annually updated standards, courses, computer-based training materials, textbooks, instructor authorization, assessment center authorization, a national registry, assessments, credentials and diagnostic tools for employers. Companies may use these tools themselves or work through their local community colleges, high schools, unions or other training providers. Individuals can also earn college credit for MSSC courses (3 hours each for core CPT modules, 2 hours for GPM and 4 hours for full-CLT) based upon the National College Credit Recommendation Service (NCCRS) course review.

MSSC's delivers these tools through a nationwide network of over 1,600 trained instructors and 942 authorized assessment centers in 49 states, DC, and 3 centers internationally. To date, MSSC has given over 127,250 assessments and issued over 95,550 credentials.

To obtain a full description of MSSC certification system tools and price sheets, including volume discounts, please contact Neil Reddy, Executive Director, at [reddyn@msscusa.org](mailto:reddyn@msscusa.org) or at 703-739-9000, ext. 2221.

# Certified Production Technician

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## Key Work Activities for Standards, Training and Assessments

### SAFETY

1. Work in a Safe and Productive Manufacturing Workplace
2. Perform safety and environmental inspections
3. Perform emergency drills and participate in emergency teams
4. Identify unsafe conditions and take corrective action
5. Provide safety orientation for all employees
6. Train personnel to use equipment safely
7. Suggest processes and procedures that support safety of work environment
8. Fulfill safety and health requirements for maintenance, installation, and repair
9. Monitor safe equipment and operator performance
10. Utilize effective, safety-enhancing workplace practices

### MANUFACTURING PROCESSES & PRODUCTION

1. Identify customer needs
2. Determine resources available for the production process
3. Set up equipment for the production process
4. Set team production goals
5. Make job assignments
6. Coordinate work flow with team members and other work groups
7. Communicate production and material requirements and product specifications
8. Perform and monitor the process to make the product
9. Document product and process compliance with customer requirements
10. Prepare final product for shipping or distribution

### GREEN PRODUCTION

1. Train workers in environmental issues
2. Implement and promote environmental programs, projects, policies or procedures
3. Conduct environmental incident & hazard investigations
4. Conduct preventive environmental inspections

### QUALITY PRACTICES & MEASUREMENT

1. Participate in periodic internal quality audit activities
2. Check calibration of gages and other data collection equipment
3. Suggest continuous improvements
4. Inspect materials and product/process at all stages to ensure they meet specifications
5. Document the results of quality tests
6. Communicate quality problems
7. Take corrective actions to restore or maintain quality
8. Record process outcomes and trends
9. Identify fundamentals of blueprint reading
10. Use common measurement systems and precision measurement tools

### MAINTENANCE AWARENESS

1. Perform preventive maintenance and routine repair
2. Monitor indicators to ensure correct operations
3. Perform all housekeeping to maintain production schedule
4. Recognize potential maintenance issues with basic production systems, including knowledge of when to inform maintenance personnel about problems with:
  - Electrical systems
  - Pneumatic systems
  - Hydraulic systems
  - Machine automation systems
  - Lubrication processes
  - Bearings and couplings
  - Belts and chain drives

5. Monitor environmental aspects at each stage of production
6. Implement continuous improvement in environmental assurance practices
7. Use advanced materials to reduce waste
8. Reprocess materials by recycling and reuse throughout product life cycle to optimize waste reduction

## Key Work Activities for Standards, Training and Assessments

### Foundation-level Certified Logistics Associate (CLA)

1. Demonstrate an understanding of the various roles in the global supply chain logistics life cycle
2. Demonstrate an understanding of the logistics environment
3. Operate and use equipment
4. Practice safety principles
5. Practice safety principles in the handling of materials and operation of equipment
6. Practice quality control principles
7. Employ work communication practices
8. Practice teamwork and good workplace behavior to solve problems
9. Use relevant computer systems and applications to increase productivity

### Mid-level Certified Logistics Technician (CLT)

1. Receive products
2. Stock products
3. Process product orders
4. Prepare packages for shipment and ship products
5. Maintain control of inventory
6. Handle hazardous materials in a safe manner
7. Evaluate transportation modes
8. Perform dispatch, routing and tracking operations
9. Understand U.S. measurements and metric system conversions

## Current Examples of Corporate Uses of MSSC Certified Production Technician (CPT) Training and Certification Program

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*Below are eleven corporate-setting examples of successful MSSC CPT implementation:*

**Auto Company Consortium** - Beginning in 2005, a consortium of auto manufacturers, including GM, Ford and Chrysler, joined with community colleges to form the Automotive Manufacturing Technical Education Collaborative (AMTEC). The goal was to better prepare highly skilled technicians as the future automotive manufacturing workforce. AMTEC chose MSSC CPT as the foundational skill standards upon which to build a more specialized curriculum for these advanced technicians. AMTEC is now sharing its curriculum and mechatronics certification with community and technical colleges at multiple locations near auto manufacturers. **Results:** AMTEC encourages colleges to use MSSC CPT Modules as the foundation for a "Certification Pathway" beginning in the final two years of high school and continuing into a two-year college as preparation for AMTEC certification.

**Bison Gear and Engineering, St. Charles** - This leading supplier of gear boxes to the food & beverages, medical and transportation industries is a pioneer in using MSSC CPT to upgrade the skills of its incumbent workforce. Since 2008, Bison has put its own trainers through MSSC CPT Instructor Training to enable them to deliver CPT training on site. It has also put its testing center operators through MSSC Proctor Training, to offer the convenience of on-site assessment to its workers. Most importantly, Bison offers a bonus for each CPT Module workers successfully complete. **Results:** Bison reports a significant increase in productivity from its CPT-certified vs. non-certified workers.

**BMW, Spartanburg** - Has been a steady supporter of CPT, including expressing strong interest at state and business association levels in job applicants with CPT and encouraging use of these MSSC credentials in South Carolina community and technical colleges. BMW participates in the competitive SC Technical Scholars program under which the company offers scholarship support to qualified individuals. They are admitted into community colleges in an Associate Degree program in an approved program of study related to various advanced manufacturing technologies, spending 20 hours in school and 20 on the job each month. **Results:** BMW embeds MSSC CPT training and testing into this program, thus adding hands-on work opportunities to apply MSSC-defined skills in a plant environment.

**Caterpillar, Peoria** - Has taken the position at the CEO level that the 2015 Edition of MSSC Production Standards "reinforce MSSC's well-established position as the leading authority on industry-wide core technical competencies for entry-level work in advanced manufacturing" due, in part, to impressive strides in the 2015 version that take into account emerging production technologies (e.g., 3-D printing, Internet of Things, and mechatronics), the inclusion of the new Global Hazmat System, and alignment of its Safety Module with OSHA-10. **Results:** Caterpillar is using, and encouraging its suppliers to use, CPT as a recruitment tool for job applicants.

**Chrysler FCA, IN and MI** - Chrysler FCA is serving as the major corporate partner with an Ivy Tech Kokomo federal grant to prepare job candidates with the full CPT Certification. This auto company views CPT as critical in helping students understand foundational areas of manufacturing and secure a recognized credential which is valuable in the workplace. Chrysler FCA sent group of their Skilled Trade Instructors to Kokomo to attend CPT Instructor Training. **Results:** Chrysler FCA is now actively considering including CPT in a career pathway program that would prepare high school students in Detroit to pursue training at the World Class Manufacturing Academy in Detroit.

**Cummins Seymour** - For several years, Cummins has been using MSSC CPT for both incoming and incumbent workers. It prepares CPT certificants to enter the workforce pre-trained with a basic understanding of manufacturing and to how work safely while producing quality products. Cummins offers incumbent workers tuition reimbursement for CPT training and testing. All four plants in Southern IN hire CPT certificants, with the Seymour Engine Plant committed to MSSC training for all its production workers. Cummins' demand for MSSC is one of the main reasons why the statewide



Ivy Tech College has an exclusive agreement to deliver MSSC training and why Indiana is the leading user state. Results: Cummins estimates that MSSC-CPT candidates will save Cummins \$1,800 to \$2,600 in training costs and takes CPT status into account in employee promotion decisions.

**GE Appliances Louisville** - Following the model identified in the NAM Task Force 2014 report, GE Appliances in Louisville, with CEO leadership, formed a coalition of companies, high schools, community colleges, Workforce Investment Boards and state agencies to propose that CPT be embedded in KY public schools to build a pipeline for years to come. Additionally, if entry-level production candidates do not have relevant work experience, GE Appliances has made CPT a requirement and has secured a commitment from the local WIB to increase the number of CPT-certified job applicants from a handful to 50 per month. Results: Both programs are now underway. Strong example of how well the community will respond if a prominent company expresses the demand for CPT from the CEO level.

**Harley-Davidson, Milwaukee** – A long-term user of MSSC CPT since its inception, Harley-Davidson offers tuition reimbursement to workers who secure MSSC training. In addition, the Harley-Davidson Foundation sponsors innovative uses of MSSC by Wisconsin high schools. This includes GPS Education Partners which integrates MSSC CPT into its curriculum, offered to high schoolers within company training facilities where they complete their junior and senior years. MSSC-authorized instructors, who are state-certified teachers, facilitate course delivery. Results: Over 100 WI companies have participated in the GPS Education Partners program with 90% job placement rates. Currently, MSSC is supporting GPS Education Partners' plans to move beyond WI.

**Lockheed Martin Aerospace, Fort Worth** - LM has given MSSC strong support over the years to strengthen its pipeline of well-qualified production workers. It has worked with various public and private training organizations in the Fort Worth area to certify individuals, especially with the CPT Safety and Quality Modules. It has played a key role within the aerospace industry as a whole to gain support for those modules. It has also signed up for the MSSC "Vet Connector" program, by agreeing to interview transitioning military who have secured MSSC credentials, given MSSC's leadership role as the single largest supplier of civilian certifications to active duty armed services personnel. Results - The new Aerospace Alliance is using CPT Safety and Quality as an integral part of its strategy for securing a talent pipeline.

**North Carolina Company Consortium** - Currently, more than 15 manufacturing firms in the Salisbury/Concord area just north of Charlotte, NC -- including Alevo, S&D Coffee, and Perdue Farms -- formed a North Carolina Manufacturing Institute (NCMI) to use MSSC CPT. By partnering with the local community college, Workforce Investment Board, and MSSC, and hands-on training, these companies gain access to a pipeline of screened, trained, certified technicians who can help them achieve their business goals. Its innovative funding and operational structure allows the Institute to deliver results in response to a rapidly-growing need for manufacturing employees with certified skills and verified work readiness. Results: Thanks to support from local manufacturers, this training is free for the students. Remarkably, the first class had a 100% passing rate.

**Toyota, San Antonio** - The large Toyota plant in San Antonio pioneered the following model: Selected students from area high schools take the MSSC Safety Course in their junior year at Alamo CC and, if they pass the assessment, have an 8-10 week summer internship at the company. They then take the MSSC Quality Course in their senior year and, if they pass, have an 8-10 week summer internship at the company. Toyota spends about \$2800 per student per year. Results: 42% of high schoolers use their CPT to go to work, 58% use dual credit with Alamo CC to seek an AA degree, mostly in same field.

# MSSC Value Proposition

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## What is MSSC?

- ✓ An industry-led non-profit, offering the **Certified Production Technician (CPT)** and **Certified Logistics Technician (CLT)** – the nation's leading training and credentialing systems for frontline work in advanced manufacturing & logistics.
- ✓ **Ensures quality** as the only national certifications accredited by the American National Standards Institute (ANSI) under ISO Standard 17024 (Personnel Certification) for both manufacturing and logistics.
- ✓ Provides a **pipeline of certified job applicants** with a solid skills foundation upon which companies can build to meet their specific needs.
- ✓ The only federally endorsed manufacturing skill standards body (by the National Skill Standards Board in 1998), **remains the nation's Gold Standard and common language for defining industry-wide skills needed by front-line workers.**
- ✓ Updates its national skill standards annually with industry experts to ensure that they **remain current with technological change** under the motto "Certifying the Industrial Athlete of the Future."
- ✓ Delivers its training and assessments through a network of 1580 MSSC-trained Instructors and 875 test centers, mostly in community colleges and high schools, in **49 states** plus D.C.
- ✓ Guarantees excellence through **vetting by U.S. Departments of Labor, Education and Veterans Affairs, Job Corps, the U.S. Military, the National Association of Manufacturers** and a host of state agencies and associations.

## Who benefits?

- ✓ Applies to a **wide population**: community and technical college students, high schoolers, Veterans, unemployed and under-employed, career changers, drop-outs and incarcerated.
- ✓ Applies to **all frontline occupations**: entry-level up to frontline supervisor--in manufacturing production (6.1 million jobs) and logistics (6 million jobs).
- ✓ Starts at **high school level** to rapidly prepare individuals at low cost for careers in advanced manufacturing and logistics even if they enter the program with little initial knowledge of these fields.

## Why is it important?

- ✓ Ensures **competency in critical work functions** of manufacturing and logistics, with ROI data showing **70-80% higher performance by MSSC-certified** vs. non-certified individuals.
- ✓ **Reduces turnover** by providing workers who report that they are motivated, confident and more comfortable working in multi-task, high performance environments.
- ✓ **Decreases recruitment costs** by providing job candidates with industry-recognized, national credentials.
- ✓ **Eliminates remedial training costs** by providing well prepared workers.
- ✓ Includes **employability skills**, such as good conduct, teamwork, communications, and problem-solving.
- ✓ Enables individuals to secure **OSHA-10 card** while also securing the more comprehensive CPT Safety Certification within the same course of study.
- ✓ Increases the number of **pre-certified Veteran job applicants**, by serving as a premier civilian credential used by Military service members to assist transition into civilian employment.